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Species

Threatened fishes of the world: *Hypselobarbus dubius* Day, 1867 (Cyprinidae)

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Keywords:
Hypselobarbus dubius- Endangered- Conservation.

Common name:
"Nilgiris barb" (English); "Kozhimeen" "Kozhi" "Arinjan kendai" (Tamil); "Ogrlu" (Kanada)

Conservation status:
Endangered (IUCN 2013)

Methods:
Fish samples were collected from Bhavani river in salem district of Tamil Nadu state, India during May 2009 using gill nets and cast nets. Fishes were identified, preserved in 10% formalin and the specimens were deposited in Manonmaniam Sundaranar University Museum of Natural History (MSUMNH), Alwarkurichi, Tamil Nadu, India and few specimens were preserved in Collections of M. Arunachalam, (CMA). Morphometric measurements and meristic counts generally follow Hubbs and Lagler (1964). A total of 30 individuals were measured and body size ranged from 107.4-251.40 mm in SL.

Identification:
Body elongate, dorsal margin elevated and the ventral margin nearly horizontal and dorsal fin origin anterior to the pelvic fin origin. Dorsal fin inserted slightly nearer to snout tip than to base of caudal fin. Distance between pelvic fin insertions to anal fin origin is equal to the distance between the pectoral fin insertions to pelvic fin insertion. Nape slightly convex behind a concavity after the occiput. Eyes moderate, present middle of the length of head and also from end of snout. Snout conically pointed and studded with pores also on cheeks in adults. Cleft of mouth extending about half the distance to below the anterior margin of the orbit. Upper jaw slightly longer and the lower jaw, labial fold interrupted. Barbels two pairs, rostral pair extends to below anterior third of orbit, maxillary ones to below its posterior edge. Dorsal fin originating anterior to pelvic fin insertion. Dorsal spine moderately strong. Anal fin longer when depressed extend beyond caudal base. Distal margin concave near tip but nearly straight. Pectoral fin long and moderately falcate extending to 3 scales anterior to pelvic fin. In life, cheeks golden, body with a greenish tinge superiorly, becoming white and tinged with gold below the lateral line.

Distribution:
Peninsular India. Inhabits rivers/streams of Cauvery river basin of Tamil Nadu, Kerala and Karnataka.

Abundance:
Reduced populations from the type localities of Bhavani river at the foot hills of Nilgiri in Pillur and Athikadavu and Bommean maduvu. In Kerala Noolpuzha, Kanthavayal of Moyarand, Kabini rivers in Karnataka. It migrates upstreams and spawns in the upper reaches of streams.

Habitat and ecology:
Hypselobarbus dubius is a bottom dwelling fish. It feeds on debris, insect larvae, mostly chironomous and higher plant

Figure 1
Hypselobarbus dubius

Table 1

The minimum, maximum, mean and standard deviation of morphometric measurements of *Hypselobarbus dubius* from upstreams of Bhavani river, Tamil Nadu, India (n=30)

No.	Morphometric Measurements	Min	Max	Median	SD
1	Standard length (mm)	107.4	251.4	176.8	
2	Snout to urocentrum	91.0	95.9	93.7	±1.2
3	Pre- anal length	71.6	77.6	74.2	±1.3
4	Pre -dorsal length	46.6	51.0	48.9	±1.2
5	Pre -pelvic length	48.5	52.6	50.7	±1.2
6	Pre- pectoral length	24.1	27.9	26.1	±1.2
7	Pre -occipital length	96.5	99.5	98.1	±0.8
8	Snout to opercle	70.0	75.4	73.2	±1.5
9	Upper jaw length	23.7	27.9	25.3	±1.1
10	Snout length	42.6	49.4	46.6	±1.8
11	Pre nasal length	31.2	36.3	33.5	±1.5
12	Orbit width	18.5	23.9	21.6	±1.7
13	Inter orbital width	36.4	42.0	39.2	±1.6
14	Inter nasal width	21.1	27.4	24.3	±1.4
15	Head width	52.2	57.5	54.3	±1.3
16	Gape width	16.6	22.1	19.7	±1.4
17	Lower jaw to isthumus	68.6	72.8	70.7	±1.2
18	Peduncle length	13.5	18.1	16.1	±1.3
19	Dorsal origin to pelvic insertion	22.9	27.6	25.4	±1.0
20	Dorsal spinous height	19.1	23.9	21.5	±1.5
21	Anal fin height	18.8	23.6	21.3	±1.4
22	Head depth at nostril	39.0	43.6	41.5	±1.4
23	Head depth at pupil	53.1	59.8	56.5	±1.8
24	Head depth at occiput	67.2	73.0	70.2	±1.7
25	Peduncle depth	9.7	11.9	10.5	±0.5
26	Caudal fin length	26.5	33.1	30.1	±1.9
27	Dorsal fin height	26.1	31.3	27.7	±1.1
28	Pectoral fin length	18.6	23.8	21.1	±1.4
29	Pelvic fin length	16.7	21.5	18.8	±0.9
30	Pelvic auxiliary scale length	4.5	8.0	6.1	±1.0
31	Maxillary barbel length	18.5	23.9	20.7	±1.8
32	Rostral barbel length	8.8	15.7	12.1	±1.8
33	Occiput to dorsal origin	21.4	24.7	23.4	±1.1
34	Occiput to pectoral insertion	15.5	19.4	17.2	±0.9
35	Occiput to pelvic insertion	31.8	36.6	34.6	±1.3
36	Dorsal insert to pelvic insertion	18.8	25.7	22.8	±1.4
37	Dorsal origin to pectoral insertion	27.1	33.6	29.9	±1.3
38	Dorsal origin to anal origin	32.5	37.9	35.2	±1.5
39	Dorsal insertion to caudal base	38.6	44.7	41.0	±1.6
40	Dorsal insertion to anal origin	20.1	25.8	23.1	±1.3
41	Dorsal insert to anal insertion	24.9	29.9	27.4	±1.3
42	Dorsal fin base length	12.2	18.1	14.8	±1.4
43	Anal fin base length	6.6	11.8	9.1	±1.1
44	Pectoral insertion to pelvic insertion	22.5	28.0	25.2	±1.3
45	Pectoral insertion anal origin	46.6	52.4	49.1	±1.7
46	Pelvic insertion to anal origin	22.2	26.6	24.6	±1.1
47	Head length	25.0	29.0	26.9	±1.1
48	Post-dorsal length	34.6	39.7	37.1	±1.5
49	Body depth	23.4	28.1	24.9	±1.0
50	Distance b/w pectoral fin to vent	43.9	48.8	46.8	±1.4
51	Distance b/w pelvic fin to vent	20.2	25.0	22.3	±1.4

matter from the riparian trees.

Reproduction:
Spawns during October - November immediately after north east monsoon in Bhavani and Moyar rivers and in Kerala and Karnataka it breeds after the south west monsoon, especially after August.

Threats:
Poor survival rates of eggs, riparian habitat degradation, continuous illegal fishing, water pollution into the main basins and introduction of gangetic carps like *Catla catla*, *Cyprinious carpio*, *Labeo rohita* and Chinese carps are the threats.

Conservation action:
Tamilnadu State Fisheries Department with the help of Forest Department established some suitable habitats in Bhavani and Moyar rivers, some steps are initiated to promote the species among the farmer though the induced breeding technique was developed during 1952 by the fisheries department in Bhavanisagar Dam.

Conservation recommendation:
Practice of aquaculture with gangetic and the exotic carps should be stopped in upstream reservoirs of cauvery river basin covering the three peninsular states of India.

Remarks:
This barb contributes an important fishery in the Bhavani sagar reservoir in Tamil Nadu but now it is reduced to less than 3% and in lower reaches of Bhavani and Moyar rivers it was completed disappeared and now rare in streams of Kerala and Karnataka part of Western Ghats.

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Table 2

The minimum, maximum and mean of meristic counts of *Hypselobarbus dubius* from upstreams of Bhavani river, Tamil Nadu, India (n =30)

	Meristic counts	Min	Max
1	Unbranched dorsal fin rays	4	4
2	Branched dorsal fin rays	9	9
3	Unbranched anal fin rays	3	3
4	Branched anal fin rays	5	5
5	Unbranched pelvic fin rays	1	1
6	Branched pelvic fin rays	9	9
7	Unbranched pectoral fin rays	1	1
8	Branched pectoral fin rays	15	17
9	Lateral line scales	43	45
10	Pre dorsal scales	13	15
11	Upper transverse rows	8	9
12	Lateral line to pelvic scale rows	6	7
13	Lower transverse rows (anus)	7	8
14	Circumpeduncular scales	19	21
15	Circumferential scales	33	36
16	Transverse breast rows	13	16
17	Snout tubercles	0	15
18	Anal scale rows	2	2

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